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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/319,566	08/09/1999	HANS-JURGEN HANSEN	27656/35739	3274

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EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 12/02/2002

19

Please find below and/or attached an Office communication concerning this application or proceeding.

AS10

Office Action Summary

Application No.

09/319,566

Applicant(s)

HANSEN, HANS-JURGEN

Examiner

Martin J Angebrannt

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 1756

1. The response provided by the applicant has been read and given careful consideration.

Responses to the arguments offered by the applicant are presented after the first rejection to which they are directed. Rejections of the previous office action not appearing below are withdrawn based upon the amendments and arguments of the applicant. The applicant's arguments are merely unsupported conclusions.

2. **The disclosure is objected to because of the following informalities: The applicant should correct misspellings within the specification, such as "diskussion" on page 11 at line 23.**

Appropriate correction is required.

- 3 Claims 7-9 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The matrix is a carrier (see specification on page 17 at lines 3-5.)

- 4 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

- 5 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

Art Unit: 1756

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6 Claim 25 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Anger et al. J. Phys. Chem., Vol. 99, pp. 650-652. (1995)

The 1,5-bisstyryl-3,7-dimethylcyclooctatetraene and the exposure thereof meet the requirements of the claims as the claims do not require any more than the isomerizations.

The applicant argues that the disclosure does not evidence two distinguishable states for the double bond shift. The examiner notes that the exposure occurs and eventually results in other isomerizations as pointed out by the applicant, but the claim language does not indicate that either of these states be stable for long term storage. The examiner also notes that the processing process includes both thermal and photoexcitation. Therefore even transitions occurring rapidly at room temperature are embraced by the current claim language. The rejection stands.

The examiner agrees that the two isomers have to be different enough to be detectable. The examiner notes that the cyclooctatetraenes of the reference would be expected to be able to undergo the same boat conformation states as shown for 2a' and 2b' on page 5 of the instant application. There is no evidence that they do not on the record and as they are different conformations, their spectral properties would inherently differ. The examiner notes that this reference does not teach heptalenes. The applicant apparently fails to recognize that isomerization is the language used in the claims to describe the different resonance/conformational states.

This rejection could be obviated by the addition of a carrier/matrix recitation. Currently, there is no language precluding the entire solution being the "selected area" in which the photochromic change is desired. The examiner also notes that no reactions are 100% efficient

Art Unit: 1756

and differences in the orientation of the compounds molecular dipole with respect to the incident light prevents at least some of the compounds from absorbing the light and undergoing the photochromic change. (ie if the dipole is not parallel with the electric field of the light, then no absorption can occur and the solutions will have all possible orientations, including some which preclude the absorption process)

7 Claim 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996).

See formulae 3 and 4.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

As discussed above, the claims embrace both photo and thermal excitation of the transition between the two states. Further, the examiner notes that the absorption of the two different states differ and that the starting product is disclosed and forms the basis for the **anticipation rejection**. The rejection is that based upon the evidence, the compounds and processes are not novel as someone has made and used these. The applicant has specifically excluded this compound in the language of claim 16 and as corresponding to the uppermost structure on page 20 of the amendment. The rejection stands.

The applicant argues enablement or perhaps the limitations of claim 19, but the reference is a 102 and is in a peer reviewed journal. With respect to figures in the reference, differences in the conjugation state clearly have an effect in the absorption properties as evidenced by the figures showing the absorption profiles of the different states, so they are evidenced as measurable. The rejection stands.

This rejection could be obviated by the addition of a carrier/matrix recitation. Currently, there is no language precluding the entire solution being the "selected area" in which the photochromic change is desired.

8 Claims 17-26 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Hafner et al., Bull. Chem. Soc. Jpn., Vol. 61, pp. 155-163 (1988).

Hafner et al., Bull. Chem. Soc. Jpn., Vol. 61, pp. 155-163 (1988) teaches the reaction of azulenes with dimethyl acetylenedicarboxylate to form chiral heptalenes. Compounds g,h,m,n,o,u and v on page 156 are not excluded by the language of claim 16. Compound 36a and 38a on page 161 are not excluded by the claim language of claim 16. The CD spectra show differences in the chiral nature of the compositions.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

The rejection stands for the reasons of record. Clearly the compounds taught in the reference have resonance in the heptalene ring.

See response above for claim 25. Claim 26 and those dependent upon it are merely direct to the preparation of these compounds, which is taught in the reference.

9 Claims 17-26 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Weber et al., Helvetica Chimica Acta, Vol. 70, pp. 1439-1460 (1987) .

Weber et al., Helvetica Chimica Acta, Vol. 70, pp. 1439-1460 (1987) teaches compounds 9 and 11 on page 1441 which are not excluded by the claim language of claim 16 (the esters are ethyl or styryl esters. The syntheses using dimethylene acetylenedicarboxylate is taught on page 1454.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

The rejection stands for the reasons of record. Clearly the compounds taught in the reference have resonance in the heptalene ring.

See response above for claim 25. Claim 26 and those dependent upon it are merely direct to the preparation of these compounds, which is taught in the reference.

10 Claim 25 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Hafner et al., Pure Applied Chem., Vol. 65(1) pp. 17-25 (1993).

Hafner et al., Pure Applied Chem., Vol. 65(1) pp. 17-25 (1993) teaches the synthesis using bis-enamine and dimethylene acetylenedicarboxylate to form useful heptalenes on page 22. Note compound 27.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

The applicant argues that compounds disclosed are not conjugated heptalenes. The examiner disagrees noting compound 27 which is fully aromatic. The examiner agrees that the main thrust is other compounds, but this represents an anticipation rejection, not obviousness. The rejection stands.

The rejection stands for the reasons of record. Clearly the compounds taught in the reference have resonance in the heptalene ring.

This rejection could be obviated by the addition of a carrier/matrix recitation. Currently, there is no language precluding the entire solution being the "selected area" in which the photochromic change is desired.

11 Claims 1-9, 11-14 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable El Houar et al., Chemia vol. 50, pp 341 (7/8-1996), in view of Van et al. '561.

Van et al. '561 teaches that it is old and well known that various photochromic materials can be dispersed in binder resins and used to record information. (1/65-2/9) Useful binders include PMMA, polystyrene and the like. (4/51-55). These recording media are used in computers.

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by Houar et al., Chemia vol. 50, pp 341 (7/8-1996) in

Art Unit: 1756

conventional photochromic recording media where the photochromic dyes are mixed with a binder as this is old and well known based upon the teachings of Van et al. '561.

12 Claim 1-9,12,15 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996), in view of Hoysoya et al. '873.

Hoysoya et al. '873 teaches that photochromic materials are known to be useful in forming optical switches when dispersed in polymeric binder. Any type of photochromic materials may be used in the switches. These include PMMA, polystyrene and various acrylate resins (6/10-27).

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996) in optical switches using photochromic recording media where the photochromic dyes are mixed with a binder based upon the teaching of Hoysoya et al. '873 that any type of photochromic materials may be used in the switches.

13 Claim 1-15 and 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996), in view of either Hoysoya et al. '873 or Van et al. '561 combined with Caulfield et al., "The Applications of Holography", pp. 30-33 (1970).

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996) as modified by Hoysoya et al. '873 or Van et al. '561 in conventional photochromic holographic media as this is old and well known based upon the teachings of Caulfield et al., "The Applications of Holography", pp. 30-33 (1970).

14 Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1756

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Angebranndt whose telephone number is (703) 308-4397.

I am normally available between 7:30 AM and 5:00 PM, Monday through Thursday and 7:30 AM and 4:00 PM on alternate Fridays.

If repeated attempts to reach me are unsuccessful, my supervisor may be reached at (703) 308-2464.

Facsimile correspondence should be directed to (703) 872-9311.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



Martin J. Angebranndt
Primary Examiner, Group 1750
November 29, 2002